

Notes on the Immature Biology of Two Riodinine Butterflies: *Metacharis ptolomaeus* and *Napaea nepos orpheus* (Lycaenidae)

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Introduction

This paper presents field and laboratory observations on the biology of two riodinid butterflies from southeast Brazil: *Metacharis ptolomaeus* (Fabricius, 1793) and *Napaea nepos orpheus* (Westwood, [1851]) that supplements information published previously (Zikan 1953; Callaghan 1985).

Metacharis ptolomaeus ranges throughout southeast Brazil from southern Bahia (Pernambuco?) south along the coast and inland to eastern Minas Gerais, Santa Catarina and Parana States from sea level to about 1000 meters, and is particularly common along the coast.

On August 30, 1988, near Barra de Sao Joao, Rio de Janeiro State (site described in Callaghan 1985), I observed a female *M. ptolomaeus* ovipositing on the leaves of a large tree around 1500 hours. Eggs were laid singly and well dispersed on separate branches of the foodplant, later identified as *Heisteria* sp. (Olacaceae), previously reported in error as *Lacistema* sp. (Callaghan, 1985). The female dragged her abdomen on the substrate before ovipositing. Three other captured females were induced to oviposit on food plant placed in a plastic box, yielding 9 eggs.

Immature Stages

EGG: Diameter 0.5mm, height 0.2mm. Color shiny bronze. Sides covered with network of ridges forming hexagonal figures, with a small tubercle at each intersection. Duration 12 days. N=9

FIRST INSTAR LARVA: (fig. 1) Length 1-1.5mm, Thorax and abdomen light yellow, pubescent. Head dark brown with numerous small setae on front; headcapsule width 0.13mm. Prothoracic shield with high transverse ridge from which 4 long, black setae project cephalad, followed posteriorad by 4 longer setae then by two shorter ones, these turning slightly caudad then cephalad; T2 with two tubercles dorsad from which two long, black setae extend, first curving cephalad then caudad. T3 through A8 with 2 pairs of long, black setae dorsad, each emerging from a small tubercle, and three similar setae extending laterally from the base of the dorsal plate on each side; A10 covered by an anal shield from which 6 long black setae extend caudad. Spiracles indistinct; found on T1, ventrad on A1 and laterally on A2-A8. n= 5

SECOND - FOURTH INSTAR LARVA: (fig. 2) Color light green, body thickened laterally and dorsad, tapering caudad and covered with long white lateral setae, giving larva an arctiid like appearance. Head brown,

many short setae on front. Prothoracic shield with numerous white setae extending cephalad, followed by a transverse ridge with 10 thick, blunt setae with small barbs along shaft; T2 with two tubercles from which extend two similar barbed setae; T3-A8 with 2 pairs of tubercles dorsad, the first pair long with black bulbs on the tips, curving caudad, second shorter with a smaller bulb; A1 and A6 with dark area dorsad across base of setae. Anal shield with 4 long setae extending caudad. Spiracles found laterally on T1, ventrally on A1 and laterally on A2 through A8, that on A2 higher than the rest. $n=2$

FINAL INSTAR LARVA: (fig.3) Length 15mm, Color dark green dorsad, light green ventrad with white mottling. Head dark brown; head capsule 2mm wide. T1-T3 with white dorsal marks; Setae same as on second instar, those on prothoracic shield and T2 with black bulbous tips similar to those on T3 through A8; base of setae on A6 raised higher on black tubercles; many white setae extending laterally from base of dorsal plate. End of anal shield with 4 long non bulbous setae extending caudad. White lateral spiracles on T1 and A2 through A8 with a row of white lenticle patches dorsad; spiracle on A1 ventrad.

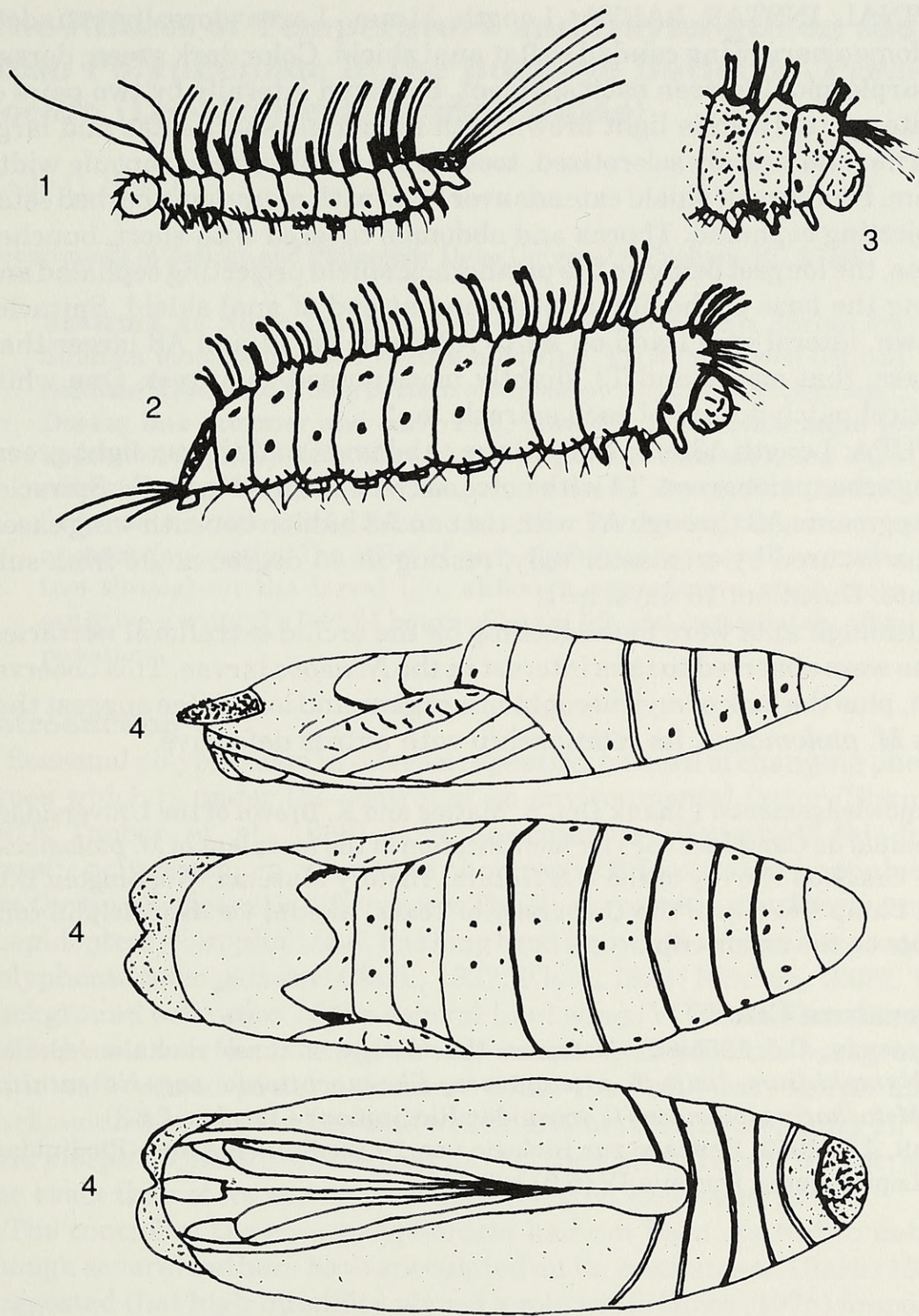
Prepupal stage lasts 2 days, larva turning lighter green color and remaining motionless on leaf. Larval development time, all instars 42 days. $n=1$.

PUPA: (fig.4) Length 13mm, width 5mm. Light green with black marks on wing cases, elongated and pointed caudad; T1 with slightly bifurcated crest; dorsal surface covered with small, mushroom shaped tubercles with tiny projecting teeth; spiracles on A2 dorsad, those on A4-A8 lateral; pupa secured by cremaster and silk threads along entire ventral surface, without girdle. Duration 10 days. $n=1$.

The first instar larvae fed between the veins on the ventral leaf surface and in later instars on the entire leaf. All instars rested for long periods, especially during molts. The larvae expelled frass forcibly, by raising the end of the abdomen, flopping it down, and ejecting frass 150 to 200mm from the larva. The larvae were cannibalistic. Three first instar larvae were devoured by their larger siblings, which may explain the dispersed ovipositing behaviour. I observed no behaviour or organs indicating myrmecophily. The larvae were covered with long setae and showed no evidence of myrmecophilous organs. Just to be sure, I placed *Camponotus* ants with the *Metacharis* larvae and the ants totally ignored them.

Napaea nepos consists of three subspecies. Nominate *nepos* ranges over the Amazon basin, intergrading into subspecies *tanos* Stichel in Bolivia, and *orpheus*, which inhabits mountain areas above 900 meters in southeast Brazil, from Espirito Santo, eastern Minas Gerais south to Parana and Santa Catarina States.

Zikan (1953) recorded larvae of *orpheus* on *Oncidium* sp. and an "Erdorchidae" (ground orchid). I found two final instar larvae of this species on *Zygopetalus* orchids in my garden in Petropolis, Rio de Janeiro, 900m. The larvae rested among the roots of the plants during the day and fed at night. They were brought into the lab and raised.



Figures: Illustrations of *M.ptolomaeus* life history. 1. First instar larva. 2. Third instar larva. 3. Head and thorax of final instar larva. 4. Pupa- lateral, dorsal and ventral views.

FINAL INSTAR LARVA: Length 11mm. Larva dorsally rounded, abdomen narrowing caudad to flat anal shield. Color dark green, dorsad a purple spot between each segment, bordered laterally by two pairs of white spots. Head is light brown with numerous short setae and large labrum and heavily sclerotized, toothed mandibles; head capsule width 3 mm. Prothoracic shield extends over head with many long, barbed setae projecting cephalad. Thorax and abdomen covered with short, bunched setae, the longest being on the prothoracic shield projecting cephalad and along the base of the dorsal plate and at end of anal shield. Spiracles brown, lateral on T1 and on A1 to A8, those on T1 and A8 larger than others; that on A2 and T1 slightly more dorsad than rest. One white lenticel patch dorsad of each spiracle. n=2

PUPA: Length 13mm, width 5mm. Abdomen and thorax light green, wing cases paler green. T1 with notched crest outlined in black. Spiracles on segments A2 through A7 with that on A3 hidden beneath wing cases. Pupa secured by cremaster only, resting at 45 degree angle from substrate. Duration: 16 days. n=1.

Although ants were found feeding on the orchid extrafloral nectaries, none were observed to take interest in the *N. nepos* larvae. This observation, plus the lack of myrmecophilous organs and long setae suggest that like *M. ptolomaeus*, its relationship with ants is defensive.

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